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UNITED STATES READY RESERVE

PHASE IV

MAINTENANCE PROCEDURES

FOR

T1-M-BT2

CLASS VESSEL

Single Screw, Bulk Oil Tanker:

M/V NODAWAY (T-AOG-78)

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VESSEL PARTICULARS

VESSEL NAME	NODAWAY ex-BELRIDGE ex-TARCOOLA
OFFICIAL NUMBER	986561
VESSEL TYPE	Motor Tank Ship T-AOG 78 T1-M-BT2
BUILT	Todd Shipyards Corporation Houston, Texas September 1945
HULL NUMBER	2639
CLASSIFICATION	ABS +A1(E), +AMS Oil Carrier
CALL LETTERS	KXEF
LENGTH OVERALL	325'-02"
LBP	309'-00"
BEAM, MOLDED	48'-02 3/8"
DEPTH, MOLDED	21'-10"
DISPLACEMENT, LOADED	6,060 Long Tons
DISPLACEMENT, LIGHTSHIP	2,060 Long Tons
DEADWEIGHT	3,911 Long Tons
GROSS TONS	3,160.3
NET TONS	2,073.94

100 GENERAL

ITEM 105 GENERAL NOTES

NOTE: THESE INSTRUCTIONS AND GUIDELINES ARE PROVIDED TO ENSURE THAT ALL PROPULSION, MACHINERY, ELECTRICAL, CARGO HANDLING, PIPING AND RELATED SYSTEMS ON THE SUBJECT VESSEL ARE MAINTAINED IN A CONTINUOUS STATE OF ACTIVATION READINESS. THE CONTRACTOR SHALL REPORT ANY AND ALL DEFICIENCIES WHICH MAY ADVERSELY AFFECT THE VESSEL'S READINESS STATUS.

A. All inspections and tests as indicated in these instructions and guidelines shall be performed at intervals as specified.

B. Contractor shall provide all supervision, labor, services, and tools necessary to perform all inspections, tests, and tasks as specified in these instructions. On-site supervision shall be provided by qualified person/personnel when performing all inspections, tests, and tasks as specified.

C. All inspections, tests, and tasks as specified by these instructions shall be performed in accordance with good marine practice and are subject to inspection by the American Bureau of Shipping and the US Coast Guard as specific regulations apply. All exercising and testing of equipment and machinery shall be performed in accordance with the individual equipment/machinery manufacturer's procedures, guidelines, safety precautions, and instructions.

D. Prior to testing all equipment and machinery as specified in these instructions and guidelines, ensure proper lubrication and proper fluid levels. Lubricate as required and replenish fluids as necessary using new fluid as recommended by the equipment's manufacturer or ship's lubrication chart. When adding fluid/lubricant to machinery, ensure new fluid/lubricant is compatible with existing fluid/lubricant.

E. While performing visual inspections, visually inspect all machinery fasteners for damage, defects, and deterioration. Replace fasteners with new fasteners equal to original as required. Ensure fasteners are properly and securely fastened. Coat fasteners with proper preservation compound as required.

F. Government owned shipboard and shore based spare parts shall not be used for performing maintenance as required by these instructions and guidelines without prior approval of the Maritime Administration or CMS Representatives.

G. Contractor shall develop check off lists and reporting system for ensuring all motors, ventilation fans, valves, tank gauging, dehumidification system, and

ITEM 105 GENERAL NOTES continued

all other equipment specified in these instructions have been properly inspected, tested, and maintained in accordance with these instructions.

H. Megger test all electrical equipment to ensure safe and satisfactory operation prior to testing and energizing same. Hand rotate all motors to ensure free operation of same. Submit report (see General Note L) of all insulation resistance readings. Ensure insulation resistance is within acceptable range as determined by equipment's nameplate data. Electrical equipment supplied by 440 volt source shall have a minimum insulation resistance of 400 kilo-ohms to ensure safe and satisfactory operation when energized. Electrical equipment supplied by 120 volt source shall have a minimum insulation resistance of 100 kilo-ohms to ensure safe and satisfactory operation when energized. All electrical equipment containing solid state components shall be megger tested in accordance with the equipment manufacturer's instructions.

I. Contractor shall ensure that adequate fire fighting capability is available aboard ship. Additional requirements as deemed necessary as a result of the tests and inspections as specified in these instructions shall be included. Fire fighting equipment and requirements shall meet the requirements of the Japanese Marine Safety Agency and other regulatory agencies governing the port/berth where the vessel is moored. The Contractor shall derive plans for fighting fires aboard the vessel. Adequate training shall be provided to all personnel. Fire control shall be readily visible and posted near gangway. See Item 110 General Tasks. Note that the contractor is to furnish fire stands and hoses. The ship's system is not to be charged as it is used for D/H air distribution.

J. Sea valves and sea chests which are not blanked off shall not be exercised. Ensure sea valves and sea chests exposed to the sea are tagged indicating the same, disabled (if required), and chained and locked closed.

K. Fuel oil, diesel oil, and lube oil system valves shall not be exercised, unless otherwise specified in these instructions and guidelines. After completing tests, and exercising as required, ensure all fuel oil, diesel oil and lube oil system valves are closed.

L. After completing all tests and inspections as specified in these instructions, complete dehumidification system report, insulation resistance readings report, tank gauge report, and all other reports and forms required by these instructions. Submit forms and a typewritten report indicating inspection and test results to the CMS Representative. Identify equipment in report with M & R codes, sub-codes and titles. Codes, sub-codes and titles shall be obtained from MarAd/CMS. The report shall be organized and formatted in the same manner as these instructions are organized and formatted. Check off lists, deficiency and condition reports shall be submitted to the CMS Representative not later than the last day of each calendar month.

ITEM 110 GENERAL TASKS

1. Provide shore power available for use; 440 V, 60 HZ, 250 AMPS. . Test for proper phasing immediately upon installation to prevent damage to equipment

2. Provide fire protection at all times. Three fire stands shall be provided on each ship at the following locations: bow, stern and midships. Sufficient hoses shall be provided to cover any area in ship, interior and exterior. The ship's equipment shall not be used.

3. System shall be charged at all times with 7bar (100 psig) pressure. The ship's portable extinguishers may be utilized for general protection, but the contractor is to provide extinguishers for the fire watch during any burning, welding, or heating operations.

4. Provide a fire watch during all burning, welding, or heating operations.

5. Take delivery and custody of any U.S. Government or Crowley Marine Services (CMS) furnished materials or equipment shipped in support of this operation, or items that are removed from ship for storage. Store, preserve and protect as required in a separate, covered and weather protected Contractor's warehouse. An inventory of vessel stores and equipment stored in warehouses shall be maintained by the Contractor.

6. Provide crane and rigging service for movement on or off ships of stores, equipment, and materials utilized in support of this operation.

7. Provide bulk trash container/s on deck or at the ship's gangway as required for garbage, trash and local recycling/environmental regulations. Remove garbage and debris as required on a daily basis during all maintenance periods.

8. Provide daily cleanup of work areas, temporary storage areas, and areas used by workmen for mustering, lunch, etc. Provide garbage cans with lids at gangway and at strategic areas on deck.

9. Smoking is strictly forbidden in all accommodation, navigation, machinery, storage and under deck spaces. Following inspection by a certified chemist, designating the vessel as 'safe for personnel and fires,"the contractor may designate an onboard, exposed weather deck smoking area. The shipyard shall provide receptacles for cigarette butts and smoking materials and be responsible for the cleanliness of the designated area.

ITEM 115 MONTHLY TASKS

TASK: Visually inspect entire vessel including all cargo tanks, machinery spaces, accommodation spaces, steering gear room, bridge, and all other spaces. The inspection shall include the following:

1. Visually inspect all bilges, bilge-wells, accessible cofferdams and voids for presence of water, oily wastes, and other liquids. Report presence of same in accordance with General Note "L." Test bilge level and flooding alarms; including both audio an visual indicators. Bilges shall be kept dry and free of oily waste and other liquids. Oily waste and other liquids shall be disposed of on a competitive unit price basis.

NOTE: THE DISCHARGE TO THE SEA OR OTHER WATERS OF OILS, OILY WASTES, SLUDGE, INDUSTRIAL WASTES, FOOD WASTE, TRASH, AND REFUSE COLLECTED ASHORE OR FROM SHIP IN PORT IS PROHIBITED. ALL OILY WASTES AND OILS SHALL BE STORED AND TRANSFERRED TO PROPER SHORE SIDE FACILITY FOR PROCESSING. NOTIFY CMS REPRESENTATIVE PRIOR TO TRANSFERRING OILS, OILY WASTES, SLUDGE, AND INDUSTRIAL WASTES.

NOTE: See item 315 and 450. Do not duplicate pricing.

2. Check stern tube shaft seals for leakage. Notify CMS representative if leakage occurs.

3. Visually inspect mooring lines for chaffing, damage, and deterioration. Report all deficiencies to CMS Representative. Tension mooring lines as required to insure equal strain, that the vessel is securely alongside the dock and that chaffing is minimized.

4. Measure and record forward and after draft readings. When noticeable change has occurred, immediately notify CMS Representative.

5. Visually inspect interior and exterior of vessel for general cleanliness. Remove trash and accumulated debris not less than once in each month. Maintain all exterior decks and interior spaces, clean and debris free. Ensure all deck drains and scuppers are free of debris and foreign materials.

6. Visually inspect shore power connection for proper connection.

7. Visually inspect all stores' lockers, valuable lockers, and slop chest to ensure seals and locks are not disturbed and broken. When seals and locks are found to be disturbed or broken, immediately notify CMS Representative.

ITEM 115 MONTHLY TASKS continued

MOBIL OIL PRODUCTS

Location	Product	Number
Winches, stern tube	Gear Oil	#632
Main Engine	Mobilgard	#450
Generators	Mobilgard	#450
CPP	DTE	#13

DATA: Mobil Oil Company preservative and lubrication oils have been specified throughout this specification and will, unless otherwise specified, be provided by the owner. Contact the CMS Representative for supply of lubricating products as required. The Mobil Oil representative in Japan is:

Mobil Oil Co., Japan
Tel: 03-3244-4430
Fax: 03-3244-4071

200 ENGINEERING

ITEM 205 DIESEL ENGINES - MAIN ENGINE AND GENERATORS

CAUTION: BEFORE STARTING MAIN ENGINE ASCERTAIN THAT ALL STERN CATHODIC ANODES ARE CLEAR OF THE WATER, THAT THE STERN IS CLEAR OF FLOATING DEBRIS, THAT A BRIDGE MOORING AND GANGWAY WATCH IS IN PLACE AND THAT BOTH THE SOUND-POWERED AND TELEGRAPH COMMUNICATIONS ARE ACTIVATED AND TESTED BETWEEN THE BRIDGE AND ENGINEROOM.

DATA: Main Propulsion Engines: One
Mfr.: Nordberg, 6 cyl., 2-cycle, 1400 hp., 18" x 25" bore and stroke.
Ord. No: 32158-1, Serial No: TSM 1861

Generator Diesel Engines: Two
Mfr.: Caterpillar Model: 3406B - TA, Each 6 cylinder; 290 kW.
Arrangement No: 946226; Port Serial No: 2WB08018
Stbd. Serial No: 2WB07987

Emergency Diesel Generator Engine:
Mfr.: Detroit Diesel 6-71, No. of cyl.: 6, RPM: 1800.

TASK: Perform the following inspections, tests and maintenance to each engine:

NOTE: Loosen stern tube packing. Re-tighten upon completion.

ITEM 205 DIESEL ENGINES - MAIN ENGINE AND GENERATORS continued

1. Check for proper lube oil level in the sump. Lubricate per the manufacturer's instruction.

2. Insure proper coolant level, concentration of corrosion inhibitor, and/or antifreeze. A proper proportion of antifreeze is to be maintained for the climate at the lay-up site. The use of antifreeze is mandatory in the emergency generator.

3. Check for adequate fuel supply. If necessary, refill day tank from settler using purifier. Clean purifier after use. (See item 270.)

4. Remove diesel exhaust blanks. Reinstall all covers after running.

5. Verify that the battery and air starting systems are charged and ready for use.

6. Start up the diesel engine, idle until the cooling water comes up to minimum operating temperature. Operate the generators under load for a least 1/2 hour. (Caution: Do not parallel generators with emergency generators or shore power connections.)

7. Check the proper operation of all gauges, sensors and controls.

8. Change the fuel and lube filters at the number of operating hours recommended in the manufacturer's operating manual.

9. All associated valves are to be completely opened and the threaded portion of the stems lubricated. After this, they are to be completely closed and then returned to their original position at lay-up.

10. Change the oil, oil filters and air filters, as required.

11. Refill D.O. service tanks from ship's supply. Maintain level between 1/3 to 2/3 full.

12. Operate all engine room ventilation and exhaust vent covers for one minute without removing covers.

PURPOSE: To insure operational readiness.

FREQUENCY OF PERFORMANCE: 3-month intervals.

MATERIAL REQUIREMENTS: Lubricating Oil, Mobilgard 450.

RECORD AND REPORT: Submit a written report of conditions found; corrective measure taken, and date of accomplishment to the CMS Representative.

ITEM 210 PROPELLER, SHAFT, AND SEAL

TASK: Inspect internal propeller shaft and stern tube seal for damage, deterioration and oil and water leakage. In conjunction with operation of diesel engine, exercise shaft rotating to 1/2 ahead and 1/2 astern for 20 minutes. Supply fresh water to stern tube cooling line during test. Tighten packing gland to prevent leakage on completion of tests. Add packing as required.

PURPOSE: To insure operational readiness, operate systems when engines are run.

FREQUENCY OF PERFORMANCE: 3-month intervals.

MATERIAL REQUIREMENTS: Teflon treated stern tube packing.

RECORD AND REPORT: Submit a written report of conditions found and date of accomplishment to CMS Representative.

ITEM 212 INSPECT AND CLEAN PROPELLER

TASK: 1. Provide services of qualified diver.

2. Back off on packing gland to allow shaft to turn. Rotate shaft per diver's requirements.

3. Remove growth by hand-scraping or wire brushing, taking care not to remove anti-fouling paint from propeller.

4. After rotating shaft take up on packing gland to stop any water leakage.

NOTE: Do not reinstall shaft lock unless ship is to be moved under tow.

PURPOSE: To prevent buildup of growth on propeller blades, and to insure operational readiness.

FREQUENCY OF PERFORMANCE: 2-1/2 years (Next due April, 2000).

MATERIAL REQUIREMENTS: None.

RECORD AND REPORT: Submit written report of conditions found to CMS Representative. Submit at least six (6) each colored pictures of the underwater hull including the propellers.

ITEM 215 STEERING GEAR

TASK: 1. Remove the ram chocking blocks, clean preservative from rams and follow-up gear.

2. Rotate pumps and motors manually to insure freedom of movement.

3. Verify megger test readings of electric motors (item 330) to insure that motors are satisfactory for operation. Item 330 covers the pricing for this specific task. Do not duplicate billing.

4. Operate rudder gear from electrical steering stands on the bridge as follows:

NOTE: BEFORE OPERATING THE RUDDER, ASCERTAIN THAT AREA IN WAY OF THE RUDDER IS FREE AND CLEAR OF ALL DEBRIS, FLOATING EQUIPMENT, AND BOATS.

5. Activate rudder angle indicator. Observe the following tests from the bridge to insure proper operation.

6. Using the starboard steering gear pump and motor, swing the rudder from midships to 35 degrees right rudder. From 35 degrees right rudder swing to 35 degrees left rudder, and then return to midships.

7. Using the port steering gear pump and motor, swing the rudder from midships to 35 degrees left rudder. From 35 degrees left rudder swing to 35 degrees right rudder, and then return to midships.

8. Using the trick wheel, swing the rudder from 35 degrees right to 35 degrees left, and then return to midships.

9. Using the emergency hand pump, swing rudder to 15 degrees right rudder and then to 15 degrees left rudder, and back to midships.

10. Using the port steering gear motor and pump set the rudder hard over at 35 degrees left rudder. Turn the wheel on the bridge as fast as possible from hard left rudder to hard right rudder. Record the elapsed time from hard left to hard right.

11. Repeat the same test starting with the rudder set at 35 degrees right rudder.

12. Perform the same tests using the starboard unit.

13. Reinstall ram blocking and preserve rams and gears as necessary.

14. Check tank hydraulic oil levels and replenish as necessary.

15. Maintain steering gear compartment deck free of all oil and dirt.

ITEM 215 STEERING GEAR continued

PURPOSE: To insure that the steering engine, hydraulic pumps, electric motors, telemotors and associated valves are operating.

FREQUENCY OF PERFORMANCE: 6-month intervals.

MATERIAL REQUIREMENTS: Owner-furnished hydraulic oil.

RECORD AND REPORT: Report test results in writing to CMS Representative. Report shall include test data and a condition report.

ITEM 220 CENTRIFUGAL PUMPS

TASK: 1. Inspect all centrifugal pumps for damage, and effectiveness of dehumidification system.

2. Rotate shafts 5-1/4 turns on all centrifugal pumps - total 23 pumps.

DATA:

1. Vacuum Pump: One each
   Mfr.: Nash Engineering
   Mfr. I.D.: LA-270, Size 3/4" x 5/16"

2. Fire and General Service Pumps: Two each
   Mfr.: Aurora Pump
   Mfr. I.D.: Type 3 x 4 AD
   Capacity: 450 GPM

3. Fresh Water Circulating Pump: One each
   Mfr.: Allis-Chalmers Co.
   Mfr. I.D.: Type SHAVE, Size 4 x 4
   Capacity: 350 GPM

4. Fresh Water Circulating Stand By Pump: One each
   Mfr.: Pacific Pumps Inc.
   Mfr. I.D.: Type 4" VKMB, Single Stage, Double Suction
   Capacity: 500 GPM

5. Fresh Water Drinking and Wash Water: Two each
   Mfr.: Fairbanks Morse and Company
   Mfr. I.D.: Size 1 1/4", Westco, Series "E", No. 146 Single Suction, Single Stage Turbine
   Capacity: 10 GPM

ITEM 220 CENTRIFUGAL PUMPS continued

6. Fresh Water Make Up Circulating: One each
   Mfr.: Fairbanks Morse and Company
   Mfr. I.D.: Size 1 1/4", Westco, Type SR-4R-13, Single Suction, Single Stage Turbine
   Capacity: 15 GPM

7. Salt Water Circulation: One each
   Mfr.: Allis-Chalmers Company
   Mfr. I.D.: Type SH-V, Size 4" x 4"
   Capacity: 350 GPM

8. Salt Water Circulating Standby: One each
   Mfr.: Morris Machine Works
   Mfr. I.D.: Type DS 6-5-6 SAV
   Capacity: 500 GPM

9. Sanitary Pump: One each
   Mfr.: Frederick Iron and Steel Inc.
   Mfr. I.D.: Type DSV-"MB", Size 2 1/2"
   Capacity: 250 GPM

10. Bilge and Ballast: Two each
    Mfr.: Lombard Governor Corp.
    Mfr. I.D. Type 2 x 3 CMB
    Capacity: 150 GPM
    Location: One B&B pump in forward pump room & one B&B pump in engine room.

PURPOSE: To insure operational readiness.

FREQUENCY OF REQUIREMENTS: 3-month intervals.

MATERIAL REQUIREMENTS: None.

RECORD AND REPORT: Submit written report to CMS Representative covering conditions and required repair for each pump.

ITEM 225 CARGO OIL PIPING AND PUMPS

DATA: CARGO PUMPS - three
Mfr.: Waterous Company
Model: P-1256
Capacity: 750 GPM
Type: Lobe type gear driven
Mounting: Horizontal

ITEM 225 CARGO OIL PIPING AND PUMPS continued

TASK: Inspect entire system for damage and deterioration, and presence of water. Manually rotate pumps 5 1/4 complete revolutions to insure freedom of movement. Pressure lubricate all grease fittings.

PURPOSE: To insure operational readiness and to reposition the shafts to prevent the seals and packing from taking a set with time.

FREQUENCY OF PERFORMANCE: 3-month intervals.

MATERIAL REQUIREMENTS: Owner's supplied grease.

RECORD AND REPORT: Submit written report of conditions found and date of accomplishment to CMS Representative.

ITEM 230 OPEN ITEM

ITEM 235 OPEN ITEM

ITEM 240 OPEN ITEM

ITEM 245 MSD SYSTEM

Data: Consumat Systems of LA. Inc. (Supplier)
New Orleans, LA 70130; (504)525-6304
Humphery Marine Services Systems, Inc. (Mfg.)
Type II System, Nod. No: 10B; Mfg. No: 5036; Serial No: 10B112

Location: Midship Space 1-32-1

TASK: Visually inspect MSD tank for the presence of moisture. Wipe down as necessary. Inspect coatings. Check pumps and Roots blowers for condition and effectiveness of preservation. Rotate pumps, blowers, and motors through 5 1/4 revolutions. Cycle 3-way valves in engine room workshop, port side outboard behind work bench.

PURPOSE: To inhibit tank corrosion and to insure operational readiness.

FREQUENCY OF PERFORMANCE: 3-month intervals.

MATERIAL REQUIREMENTS: None.

RECORD AND REPORT: Submit written report of conditions found to CMS Representative.

ITEM 250 OPEN ITEM

ITEM 255 AIR COMPRESSORS AND PIPING SYSTEMS

DATA:

Ship's Service Air Compressor: One
Mfr.: Quincy
Type: Reciprocating, Duplex two (2) stage, air cooled
Discharge Press: 250 psi

Diesel Engine Starting Air Compressor: Two
Mfr.: Quincy
Type: Reciprocating, Duplex two (2) stage, air cooled
Discharge Press: 250 psi

Ship's Service Air Tank: One
Capacity: 25 cubic feet
Size: 24 inch O.D. x 4 ft. long
Relief Valve Setting: 110 psi
Location: 1-48-0

Starting Air Tanks: Four
Capacity: 65 cubic feet
Size: 36 inch O.D. x 10 ft. long
Relief Valve Setting: 250 psi
Location: Engine Room, upper level

TASK: Perform the following inspections and tests on the ship's service, control, and two diesel engine starting air compressors.

1. Close up any fittings opened for draining the compressed air system.

2. Check the air compressor sumps for lube oil, add as required.

3. Check the motor controllers for sticking contacts and relays.

4. Activate the compressor and test for proper functioning of the manual and automatic standby start functions.

5. At the completion of the testing, drain down the system.

6. All associated valves are to be completely opened and the threaded portion of the stems lubricated. After this, they are to be completely closed and then returned to their original position at lay-up. Valves in air piping system are to be opened/closed as found. Air receivers are to be drained.

7. Change the compressor oil as required from owner's supply.

ITEM 255 AIR COMPRESSORS AND PIPING SYSTEMS continued

FREQUENCY OF PERFORMANCE:3-month intervals, except oil change to be done annually.

MATERIAL REQUIREMENTS: Owner's supplied heavy grease and compressor oil.

RECORD AND REPORT: Submit written report of conditions found and date of accomplishment to CMS Representative.

ITEM 260 BOILER

DATA: Mfg: VA Power Corporation
Chicago, Ill. 60648
Model FBC-4605-THK-2; Serial No. 22664; 18 BHP; WP: 35 psi
Fuel: No. 2 Diesel Oil

TASK: 1. Inspect the heating boiler internals for deterioration and check condition of firesides and watersides.

2. Develop test procedures to simulate boiler control and alarm circuits. Cycle controls without operation of boiler.

PURPOSE: To insure operational readiness.

FREQUENCY OF PERFORMANCE: 6 month intervals.

MATERIAL REQUIREMENTS: None.

RECORD AND REPORT: Submit written report of conditions found to CMS Representative.

ITEM 265 OPEN ITEM

ITEM 267 OPEN ITEM

ITEM 270 LUBE OIL PURIFIERS AND HEATER

DATA: ALFA LAVAL
Model # MAB-103B-24-60/4205-1; Mfg. No: 4049106

TASK: 1. Operate the lube oil purifier and the Alfa Laval HeatPac lube oil heater for six (6) hours to purify lube oil from the main engine sump.

ITEM 270 LUBE OIL PURIFIERS AND HEATER continued

2. Clean purifier on completion and restore to operating status.

PURPOSE: To insure operational readiness.

FREQUENCY OF PERFORMANCE: 3-month intervals.

MATERIAL REQUIREMENTS: None.

RECORD AND REPORT: Submit written report of conditions found and date of accomplishment to CMS Representative.

ITEM 275 LUBE OIL ANALYSIS

TASK: 1. Obtain samples of lube oil from the steering gear system, and the crankcases of the main engine, two SS generators, and the emergency generator. Submit to the CMS Representative for forwarding to a Mobil Oil laboratory for spectrographic and physical analysis of chemical and physical properties, contamination or breakdown of original quality.

2. Insure that all sampling equipment and containers are absolutely clean and free of contaminants prior to sampling and containing samples.

3. Clearly mark samples with I.D. number, vessel, equipment number, etc.

PURPOSE: To insure that lube oil is suitable for immediate use.

FREQUENCY OF PERFORMANCE: Annually.

MATERIAL REQUIREMENTS: Owner's supplied sample containers and services for analysis. Mobil Oil shall be the primary source.

RECORD AND REPORT: Written laboratory analysis report sent to CMS Representative.

ITEM 280 OPEN ITEM

ITEM 285 OPEN ITEM

ITEM 290 SHIP'S REFRIGERATION & AIR CONDITIONING

DATA: Ship's Service Reefers: Two each
Mfr.: Doyle and Roth Corp.
Model: R
Type: Universal

ITEM 290 SHIP'S REFRIGERATION & AIR CONDITIONING continued

Reefer Condensers: Two each
Mfr.: Doyle and Roth Corp.
Mfr. I.D.: No. 25 Condenser, C-834
Type: Shell and Tube
Tube Size: 5/8 in. O.D.

TASK: 1. Inspect systems for damage and deterioration. Check all removed piping sections for proper identification and the presence of bolting, gaskets, etc.

2. Check oil levels in compressors. Oil level should be above shaft oil seals. Rotate crankshaft by hand 1/4 turn.

3. Inspect condenser internals for moisture.

4. Run the refrigerators in the Officer's Saloon and Crew's Mess for one or two hours to ensure proper operation of the electrical and cooling systems. Insure that the door gaskets seal properly.

FREQUENCY OF PERFORMANCE: 6 months.

MATERIAL REQUIREMENTS: None.

RECORD AND REPORT: Submit a written report of conditions found to the CMS Representative.

300 ELECTRICAL

ITEM 305 CATHODIC SYSTEM

DATA: Mfg: CAPAC Cathodic Protection System
Engelhard Systems, Union, New Jersey 07083
Part No: 50140-28; Serial No. 8102

LOCATION: Location: Permanently mounted, 1-32-2 Midship Space

TASK: Monitor operation of the Impressed Current Cathodic Protection System (ICCP) and adjust as required. This consists of three principal steps:

1. The systematic and regular accumulation of Hull Potential readings taken by means of an Engelhard Portable Hull Potential Meter at monthly intervals.

2. The regular accumulation of readings taken at the current metering stations.

3. The adjustment of rectifier tap switches, automatic controls, adjustable resistors and rheostats, as required, to effect a hull potential of 800 to 900 millivolts.

SPECIFICATIONS:

1. On a Weekly Basis: Monitor the CAPAC Impressed Current Cathodic Protection (ICCP) System and log set point, reference cell voltages and current output at the Controller/Power supply. Check that the set point is at .85. Adjust if necessary. Master unit is located at 1-32-2, Midship Space.

2. On a Monthly Basis: Use a Portable Hull Potential Meter to measure the hull potential at various points along the external hull as follows:

   a. Drop the silver/silver chloride half cell into the water at the bow.

   b. Release enough line to allow the cell to sink to a level even with the keel.

   c. Ground the meter ground probe.

   d. Observe and record the reading.

   e. Move down the starboard side of the ship taking similar readings at 40-60 feet intervals.

   f. Try to get readings midway between the CAPAC ICCP System anodes.

   g. When approaching the stern, take readings directly off the stern.

ITEM 305 CATHODIC SYSTEM continued

h. Continue to take readings along the port side.

i. When last reading is taken at the port bow and logged retrieve the half cell. A complete hull potential profile is now logged.

j. Note frame numbers of the reading locations and the CAPAC ICCP anodes and reference electrodes.

3. On an Annual Basis: Clean CAPAC ICCP System power supply controller of dirt, dust and foreign matter. Clean anodes and reference electrode of foreign matter as required.

PURPOSE: To insure that the under portion of the Hull is being adequately protected from corrosive action.

FREQUENCY OF PERFORMANCE: Monitoring and Adjusting - Weekly
Probe Readings - Monthly
Clean Power Supply - Annually

MATERIAL REQUIREMENTS: Miscellaneous spare parts and materials, ¥10,000 per year, per ship.

RECORD AND REPORT: A record of all readings shall be submitted to CMS Representative.

NOTE: Leave copy of readings on board near control center for monitoring by ABS/USCG.

ITEM 310 DEHUMIDIFICATION SYSTEM

DATA: Mfg.: CARGOCAIRE Engineering Corporation
Size: 500 CFM-7-5; Model: HC-500; Type: Wheel Drum; Volts: 440 VAC
Serial No: 008

LOCATION: Location: Permanently mounted, 1-32-2 Midship Space

Condensate drain: Bulkhead penetration to main deck

MFG.: EBAC Systems Inc., Williamsburg, Virginia
Model: CD-425
Volts: 460 VAC
Location: Temporarily mounted, 1-43-0, Aft Pumproom
Condensate drain: Drains via WTD removed dog

MFG.: EBAC Systems Inc., Williamsburg, Virginia
Model: CD-100
Volts: 110 VAC
Location: Temporarily mounted, 01-52-0, Engineroom
Condensate drain: Via hose to 2-54-2 overboard deck drain

MFG.: EBAC Systems Inc., Williamsburg, Virginia
Model: CD-30
Volts: 110 VAC
Location: Temporarily mounted:
1-10-2 Forward Stores, Drains via WTD removed dog
1-20-2 Forward Stores, Drains via WTD removed dog
02-32-1 Radio Room, Drains via WTD removed dog
02-30-2 Passage, Drains via WTD removed dog
01-62-0 Hospital, Drains via WTD removed dog

SPECIFICATIONS: This consists of five principal steps:

1. Taking readings at humidity indicators
2. Adjustments
3. Momentary test run of D/H machines
4. Periodic observation and recording of the elapsed time indicators
5. Maintenance of recording hydrogrometer

Performance of the above will indicate whether or not adjustments are necessary to affect to maintain a uniform relative humidity range between 37% and 42% throughout the D/H zone. Any malfunction of equipment or the leakage of air and/or water within the D/H envelope will also be indicated as a result of these test operations. Contractor shall make adjustments to the air distributions and seal any air leaks into the D/H zone as discovered by the inspections.

ITEM 310 DEHUMIDIFICATION SYSTEM continued

TASK: 1. Record weekly humidity readings at the following locations:

NOTE: For location review and controls it is helpful to record the date and reading on duct-tape pasted in each location

a. Fore Peak Space
b. Wheelhouse
c. Aft steering flat
d. Lower Engineroom
e. Hospital
f. Aft Pumproom

Record monthly humidity readings at the following locations which do not contain ballast water. A 40% to 50% humidity range is acceptable in the following tanks:

Port Cargo Tank	Stbd. Cargo Tank
No. 1	No. 1
No. 2	No. 2
No. 3	No. 3
No. 4	No. 4
No. 5	No. 5
No. 6	No. 6

NOTE: Cargo tank coverage may vary owing to water ballast.

2. ADJUSTMENTS:
a. By opening and closing adjacent fire main hydrants to adjust the flow of dehumidified air to the compartment or area.

b. By adjusting the humidity levels a the individual machine per the manufacturer's instructions.

3. D/H MACHINE TEST RUN:
To perform the D/H machine test run, the person assigned to perform this task must visit each machine located within the D/H zone. If the D/H machine is not running, he will momentarily engage the manual control switch, which is located on the machine's control panel. The D/H machine should start to run, then shut off. Return control switch to automatic position.

ITEM 310 DEHUMIDIFICATION SYSTEM continued

4. ELAPSED TIME INDICATOR:
The person assigned to perform this task shall also observe and record the running time on each of the D/H machines as indicated on the elapsed time indicators. The indicators are located on each machine. The readings taken and recorded at each monitoring interval shall be compared to the previously recorded reading to determine if the machine has been running excessively. Excessive running time will indicate (1) a faulty D/H machine or machines, (2) air and water leaks in the D/H zone, or (3) faulty system adjustments.

5. RECORDING HYDROGROMETER
a. The recording hydrogrometer is located in the Engineroom at 01-52-0. Maintenance requirements include changing the recording charts once each 30 days, replacing the batteries once each 6 months and periodic change of the recording pens. Monthly charts should be clearly marked with the vessel's name, the start date and time, the ending date and time. The instruments are manufactured in Japan with parts, charts and pens readily available from the manufacturer.

b. Periodically it will be necessary to adjust the temperature and humidity settings on the recorder. This should be accomplished at least once in each 3 month period to insure recording accuracy.

NOTE: This is an ABS/USCG item.

PURPOSE: To insure operation of the dehumidification system and integrity of the D/H envelope.

FREQUENCY OF PERFORMANCE: Weekly readings and station adjustment as required. Monthly readings and replacement of lower engine room recorder graph and occasional replacement of batteries and pens.

MATERIAL REQUIREMENT: Miscellaneous spare parts and materials ¥10,000 per ship, per year.

RECORD AND REPORT: Submit a report of readings, conditions and monthly recorder charts to the CMS Representative. A copy of all readings shall be left on board for review of American Bureau of Shipping Surveyor.

ITEM 315 FLOODING ALARM SYSTEM

TASK: 1. Test the flooding alarm system by tripping all float switches in following areas:

a. 2 each in Forward Lower Hold, Frame 10
b. 2 each in Forward Pump Room bilge, Frame 23
c. 4 each in After Pump Room bilge, Frame 24
d. 4 each in Forward Engine Room bilge, Frame 47
e. 4 each in Aft Engineroom bilge well, Frame 75

NOTE: The central control unit is permanently mounted at 1-32-2.

2. Trip switches one at a time and check for activation of siren, and red light located at top of wheelhouse, and horn at 03-34-2.

PURPOSE: To insure that Flooding Alarm System is operable.

FREQUENCY OF PERFORMANCE: Monthly.

MATERIAL REQUIREMENTS: None.

RECORD AND REPORT: Submit written report of conditions found to CMS Representative.

ITEM 320 SHIP'S LIGHTING SYSTEMS

TASK: 1. Activate the ship's interior/exterior lighting and emergency lighting circuits. Check each circuit for grounds. Re-lamp and replace ballast as necessary using owner's supplied lamps and equipment.

2. Prior to the next quarterly operation of equipment, advise CMS representative of light and fixture requirements.

PURPOSE: To insure operational readiness of ships lighting systems.

FREQUENCY OF PERFORMANCE: 3-month intervals.

MATERIAL REQUIREMENTS: None.

RECORD AND RECORD: Submit written report of any electrical deficiencies, grounded circuits, or mechanical defects found to CMS Representative.

ITEM 323 NAVIGATIONAL LIGHTING

TASK: Activate the running light indicator and the navigation light panel by placing all switches in "ON" position and note whether indicator lights come on. Test filaments. Inspect the running light boxes located at port and starboard bridge wings. Inspect and lubricate hinges and latching device on access doors. Replace any burnt out lamps from owner's supply. Open all fore and aft mast light elements. Inspect to insure clean and dry. Replace all defective bulbs. Test all lights to insure operation. Close all elements and seal with new gaskets if required.

PURPOSE: To insure operational readiness of the navigational lighting system.

FREQUENCY OF PERFORMANCE: 3-month intervals.

MATERIAL REQUIREMENTS: Preservation oil, navigation light bulbs, gaskets.

RECORD AND REPORT: Submit a written report of conditions found to CMS Representative.

ITEM 325 OPEN ITEM

ITEM 330 INSULATION (MEGGER) READINGS

TASK: Obtain and record 500 volt megger insulation readings of every power, lighting, and intercommunication circuit throughout each ship as follows:

1. POWER CIRCUITS
Measure insulation resistance of each power circuit, motor and generator, controller, and its associated electrical circuit components blocked in a single circuit. Isolate circuits or components with megger readings of less than 1 kilo ohm per volt and determine their precise locations of the low reading. Furnish the CMS Representative with location of each low reading.

2. LIGHTING CIRCUITS
Measure insulation resistance of each lighting feeder circuit with all distribution panel branch circuits and local area control switches blocked in as a single circuit. Isolate circuits or components with megger readings of less than 1 kilo ohm per volt and determine the precise locations. Furnish the CMS Representative with location of each low reading.

3. INTERCOMMUNICATION EQUIPMENT
a. Measure insulation resistance of each communication, navigation, alarm, transmitting, and indicating circuits and their associated components, other than electronic equipment, throughout the ships. Isolate circuits or components with megger readings of less than 1 kilo ohm per volt and determine their locations. Report each low reading to CMS Representative.

b. Exercise special care to prevent megger voltage from entering components that may be damaged by same.

4. The following list of direct current generators and motors:

Equipment	Location	HP
Ventilation Fan	02-33-2	1
Ventilation Fan	02-33-4	1-1/2
Ventilation Fan	02-49-1	3
Ventilation Fan	02-50-1	1
Ventilation Fan	02-56-1	2
Ventilation Fan	02-56-2	3
Ventilation Fan	02-66-2	2
Ventilation Fan	01-32-1	1-1/2
Ventilation Fan	01-53-2	7-1/2
Ventilation Fan	01-60-1	7-1/2
Ventilation Fan	01-70-2	1-1/2
Ventilation Fan	1-21-1	1-1/2
Ventilation Fan	1-22-1	1/4
Ventilation Fan	1-24-2	1/4
Ventilation Fan	1-45-0	1
Ventilation Fan	1-76-2	1/2
Ventilation Fan	1-81-1	1/2

ITEM 330 INSULATION (MEGGER) READINGS continued

Equipment	Location	HP
Ventilation Fan	1-81-2	1/2
F.W. Circulating Pump	Engine Room	1
F.O. Transfer Pump	Engine Room	5
Priming Pump	Engine Room	2
F.O. Booster Pump	Engine Room	3/4
STBY F.O. Booster Pump	Engine Room	3/4
F.W. Drinking & Washing Pump #1	Engine Room	1
F.W. Drinking & Washing Pump #2	Engine Room	1
F.O. Purifier	Engine Room	2
Sanitary Pump	Engine Room	20
F.W. Circulating Pump	Engine Room	10
STBY F.W. Circulating Pump	Engine Room	10
S.W. Circulating Pump	Engine Room	7-1/2
STBY S.W. Circulating Pump	Engine Room	10
Air Compressor #1	Engine Room	20
Air Compressor #2	Engine Room	20
Ship's Service Air Compressor	Engine Room	20
L.O. Service Pump	Engine Room	15
STBY L.O. Service Pump	Engine Room	15
Fire & General Service	Engine Room	40
Fire Pump	Engine Room	40
Bilge & Ballast Pump	Engine Room	7-1/2
Boiler Feed Pump	Engine Room	3
Reefer Compressor #1	Engine Room	5
Reefer Compressor #2	Engine Room	5
Reduction Gear Pump #1	Engine Room	3
Reduction Gear Pump #2	Engine Room	3
Turning Gear Motor	Engine Room	3
Cargo Pump #1	Engine Room	60
Cargo Pump #2	Engine Room	60
Cargo Pump #3	Engine Room	60
Lathe	Machine Shop	2
Drill Press	Machine Shop	1
Grinder	Machine Shop	1
Bilge & Ballast Pump	Fwd Pump Room	5
Priming Pump	Fwd Pump Room	1
Anchor Windlass	01-10-1	50
Warping Winch	10-76-0	25
Port Steering Gear	1-79-0	10
STBD Steering Gear	1-79-0	10
Ship Service Generator #1	Engine Room	250 kW
Ship Service Generator #2	Engine Room	250 KW
Motor - Generator #1	Emerg. Gen. Room	5 KW

ITEM 330 INSULATION (MEGGER) READINGS continued

Equipment	Location	HP
Motor - Generator #2 Generator Room	Emerg. Gen. Room	5 KW
Emergency Generator	Emerg. Gen. Room	75 KW

PURPOSE: To insure operational readiness and to facilitate activation.

FREQUENCY OF PERFORMANCE: 6-month intervals.

MATERIAL REQUIREMENTS: None.

RECORD AND REPORT: Submit 3 typed copies of all readings to CMS Representative. Printouts shall be retained for comparison after completion of the first semiannual cycle.

ITEM 335 SWITCHBOARDS, CONTROLLERS, AND CIRCUIT BREAKERS

TASK: 1. Prior to energizing electrical systems: inspect and manually exercise all circuit breakers on ship service, emergency generator, deck machinery, anchor windlass, and steering gear room switchboards. Inspect and manually exercise contractors in all motor controllers through ship. Inspect all items for cleanliness and wipe down as necessary. Inspect all controller contacts for excessive pitting or wear.

CAUTION: The switchboards and controllers must NOT be energized while performing the above tasks. Lock out and tag at shore power source.

2. Upon completion of this task, all switches are to be left in "OFF" or "OPEN" position to preclude inadvertent equipment starts when switchboards and circuits are energized.

3. Put ship's service generators on the board when diesel engines are tested (See Item 207). Do not parallel with shore power or emergency generator.

PURPOSE: To insure operation readiness of switchboards, controllers and circuit breakers.

FREQUENCY OF PERFORMANCE: 3-month intervals.

MATERIAL REQUIREMENTS: None.

RECORD AND REPORT: Submit a written report of conditions found to CMS Representative.

ITEM 340 WEATHER EXPOSED LIGHTING, RECEPTACLES AND TUBES

TASK: 1. Inspect and maintain watertight all weather exposed lighting fixtures, receptacles, and cable stuffing tubes. Stuffing tubes were sealed with shipyard supplied sealant during Item 330 covers the pricing for this specific task. Do not duplicate in deactivation billing.

2. Inspect for missing or damaged receptacle covers, outlet caps, vapor-proof globes and metal guards.

3. Repair any weatherizing of connectors or bare wiring leads found during inspections, presently enclosed in heat shrinkable tubing.

PURPOSE: To insure operational readiness and to facilitate activation.

FREQUENCY OF PERFORMANCE: 3-month intervals.

MATERIAL REQUIREMENTS: General Electric RTD 102 sealant or equivalent.

RECORD AND REPORT: Submit written report to CMS Representative.

ITEM 347 ENGINEERING PLANT CONTROL SYSTEMS

TASK: Activate the engine telegraph system. Station one person in the engine room and one person in the Wheelhouse and test the telegraph at all positions. Insure that the continuous alarm works in both the Engineroom and Wheelhouse. At conclusion of test deactivate system.

PURPOSE: To insure that the engine telegraph system is operable.

FREQUENCY OF PERFORMANCE: 6-month intervals.

MATERIAL REQUIREMENTS: None.

RECORD AND REPORT: Submit a written report of conditions found to CMS Representative.

ITEM 355 SOUND POWERED TELEPHONE SYSTEM

TASK: Test operate the telephone system at each station and examine telephones for defects. Check outside watertight boxes for condition. Check station-to-station continuity in any dialing combination.

PURPOSE: To insure operational readiness of the sound powered telephone system.

FREQUENCY OF PERFORMANCE: 6-month intervals.

MATERIAL REQUIREMENTS: None.

RECORD AND REPORT: Submit a written report of conditions found to CMS Representative.

ITEM 360 GALLEY EQUIPMENT

TASK: 1. Visually inspect the following equipment for internal and external deterioration:

a. General Electric Oven Model CN63
b. Deep Fat Fryer - GD Model DK-20
c. Marine Dishwasher - GE Model SK501
d. General Electric Marine Range Model MR 73A

2 Operate switches without power to ensure they are mechanically free.

3. Operate doors to insure that hinges are free and that latches engage.

4. Megger test each unit and system. (See item 330).

5. Apply electric power to each heating unit through their respective switches at the lowest heat setting to test plates, heating coils and proper operation of thermostat.

6. After completion of testing, turn all switches and controls to "OFF" position and disconnect power switches or breakers.

PURPOSE: To insure that galley equipment is operable.

FREQUENCY OF PERFORMANCE: 6-month intervals.

MATERIAL REQUIREMENTS: None.

RECORD AND REPORT: A written report of conditions found and megger readings shall be given the CMS Representative.

ITEM 370 BATTERIES

TASK: Marine-type batteries for the following services have been provided.

a. Two each, 6 volt, 200 AMP. HOUR starting batteries for emergency diesel generator, 02-112-0;

b. Eight each, 6 volt, 100 amp. hour, for general alarm and internal communications, 02-104-2;

c. Two each, 6 volt, 500 AMP. HOUR, emergency radio, 02-104-2;

d. Two each, 24 volt, Gel-Cell, auxiliary generator controls in lower engine room.

1. Place all batteries on trickle charge onboard the vessel and maintain for instant use.

2. Inspect each battery cell by cell to insure adequate liquid level. Fill as required with shipyard supplied distilled water.

PURPOSE: To insure operational readiness and to facilitate activation.

FREQUENCY OF PERFORMANCE: Continual.

MATERIAL REQUIREMENTS: Marine type battery charger area.

RECORD AND REPORT: Submit written confirmation that batteries are on trickle charge to CMS Representative.

ITEM 375 GENERAL ALARM SYSTEM

TASK: Using portable 12-volt battery, referencing Damage Control Manual (located in Chief Engineer's office files) for reference for bell locations; test the general alarm system and ascertain that all bells operate satisfactorily.

PURPOSE: To insure that the general alarm system is operable.

FREQUENCY OF PERFORMANCE: 6 month intervals.
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MATERIAL REQUIREMENTS: None.

RECORD AND REPORT: Submit written report of conditions found to CMS Representative.

ITEM 380 SHIP'S RADIO EQUIPMENT

DATA: Main Transmitter: RCA, ET8051A(MF)
SITOR (HF) Transceiver: SEA Inc., SEA300A
Reserve Transmitter: RCA, ET8043
Main Receiver: ITT Mackay, 3031A
Reserve Receiver: RCA, ACR8510
500 kHz Automatic Keyer, RCA, AR8651
500 kHz Auto Alarm Receiver: RCA. AR-8603
Battery Charger, ITT Mackay, MR-515-197A
2182 kHz Watch Keeping Receiver: Electro-Nav, EN2182R
Direction Finder: Mackay Radio, 4004/A
Lifeboat Radio: ITT Mackay, 401A
No. 1 VHF Radiotelephone: Raytheon, RAY-90
No. 2 (Ship To Ship) VHF Radiotelephone: Raytheon, RAY-90
E.P.I.R.B., Litton Systems, Inc., Mod. 948-000001
Lifeboat Radios: ACR Electronics, SR-102
NAVTEX Receiver: JRC, NCR-300A
INMARSAT-A: Magnavox, MX2400
GPS Receiver: Trimble Navigation, NAVTRAC GPS
SART Radar Transponder: Lo-Kata, 9-IM
VHF Hand-Sets: Motorola, Trition MP+

TASK: The Crowley Representative will provide a certified marine radio technical representative to activate, test and operate ship's radio station and auxiliary radio transmitters and receivers. Test auto-alarms, antenna, weather fax and associated equipment. Test VHF and ship-to-ship communications equipment. Deactivate equipment on conclusion of task and report accordingly. Coordinate repairs with CMS Representative.

NOTE: This item is to be coordinated with ABS Representative's inspections for the annual renewal of the ship's Safety Radiotelegraphy Certificate.

PURPOSE: To insure that radio equipment is operational and can meet the 10-day ready for sea activation requirement.

FREQUENCY OF PERFORMANCE: Annually.

MATERIAL REQUIREMENTS: Contractual services for technical representative.

SPECIAL NOTE: The service representative shall determine if there are local restrictions on radio transmission before any transmission/receiving tests are started.

RECORD AND REPORT: The service representative will submit written report of conditions found to CMS Representative.

NOTE: The report should include an letter to the Ship's Master verifying the condition of the ship's bridge-to-bridge VHF radio unit.

ITEM 385 NAVIGATION EQUIPMENT

TASK: The CMS Representative will provide service technicians to operate and service the following navigational equipment:

1. Gyro compass, course recorder and autopilot: Sperry, MK-37E
2. Radar No. 1: Raytheon Mariner's Pathfinder, RAYCAS 16
3. Radar No. 2: Raytheon Pathfinder/Anti Collision, TR/1660/12S
4. Radar Inter-switch: Raytheon, COMMERC1/C
5. Recording depth finder: Raytheon
6. Indicating Depth Finder, Raytheon, DE 714/715
6. Wind Indicator: Friez - 135, Aerovane
7. Loran C Receiver: Micrologic, Type ML-320
8. Weather Fax: Furuno, DFAX
9. Speed Log: Boston Controls, Mod. 564.40

Servicing will consist of condition survey and a determination of the steps necessary for full activation within a 10-day period. Contractor shall provide a certified letter stating equipment conforms to Safety Of Life At Sea (SOLAS) requirements.

NOTE: The servicing should be coordinated with the US Coast Guard Certificate of Inspection or Mid Term Inspections.

PURPOSE: To insure operational readiness:

FREQUENCY OF PERFORMANCE: Annually.

MATERIAL REQUIREMENTS: None.

RECORD AND REPORT: Submit written condition reports to CMS Representative.

ITEM 390 BALLAST DISCHARGE OIL CONTENT MONITOR

DATA: Mfg. Bristol Babcock
Type 07M18, Oil Content Monitor
U.S. Rep: North East Controls, Inc.
S. Hackensack, NJ - Tel: (201) 440-5600

TASK: Activate the system and manually test alarms. Test unit sensitivity per manufactures directions. Insure alarm and recording responses during the tests.

NOTE: The servicing should be coordinated with the US Coast Guard Certificate of Inspection or Mid Term Inspections.

PURPOSE: To insure that the system is operable.

ITEM 390 BALLAST DISCHARGE OIL CONTENT MONITOR continued

FREQUENCY OF PERFORMANCE: Annual intervals.

MATERIAL REQUIREMENTS: External water source.

RECORD AND REPORT: Submit written report of conditions found to CMS Representative.

ITEM 400 HULL

ITEM 405 LIFEBOAT DAVITS AND WINCHES

DATA: Lifeboat Davits
Mfg: Marine Safety Equipment Corporation
Farmingdale, N.J.; Date: 1/18/56
Type: SP-24; Maximum Load: 6,300 lbs.; Serial No: 333-L.N.

TASK: 1. Check davit winch oil levels; refill with owner's supplied oil as required prior to operating equipment. Lubricate all grease fittings and exposed areas (Quarterly Requirement).

2. Lower boats a minimum of three times to above the water's edge or as far down as possible to insure unassisted lowering. Demonstrate independent operation of forward and aft limit switches. Allow each boat to lower at maximum rate to test unassisted braking (Quarterly Requirement).

3. High pressure lubricate all winch, davit and sheave fittings. Coat exposed and top layer drum wires with heavy duty grease (Quarterly Requirement).

4. Inspect boat bilges to insure they are dry and clean (Quarterly Requirement).

5. Inspect boat covers to insure that they are adequate for continues service, not torn or holes, and that all lashings are adequate. Replace boat cover on each boat on the completion of the tests and operation (Quarterly Requirement).

6. Restore disturbed coatings on boats, davits and winches per paint specifications with owner's supplied paint (Quarterly Requirement).

7. Per CFR 46, 94.35-5, provide the following services, in addition to Items 1 through 6 above, during US Coast Guard Inspections every year (next due in October 1997):

a. Provide and temporarily install in each boat a total of 6,640 pounds (3,020 kilos) to conduct davit and equipment weight tests (Annual Requirement).

b. Provide line handlers, pilot and one assist tug boat to breast the ship's stern off the dock to provide for clearance during the lowering of the inboard boat per the following item (Annual Requirement).

c. Insure boat drain plugs are in place. Lower weighted boat to the water's edge. Board one boat operator, one engineer and two laborers to start engine, release and operate the boat under power in the astern and ahead positions for 15 minutes, connect boat to boat falls, stop and secure the engine, disembark while boat is hoisted aboard and secured, flush the

ITEM 405 LIFEBOAT DAVITS AND WINCHES continued

engine cooling system with fresh water. Open boat drain plugs, drain and clean bilges before covering (Annual Requirement).

MACHINERY: Port and starboard lifeboat engines, releasing gear, winches, davits, wires, blocks, and limit switches.

PURPOSE: To insure that all equipment operates freely.

FREQUENCY OF PERFORMANCE: Quarterly and Annual.

MATERIAL REQUIREMENTS: Grease, commercial grade fresh water, grease fittings, owner supplied Mobil One lube oil, paint.

RECORD AND REPORT: Make written report of any mechanical or material defects to the CMS Representative with repair cost estimate included.

ITEM 407 LIFEBOATS

DATA:

PORT LIFEBOAT (37 Persons)	STBD. LIFEBOAT (37 Persons)
Mfg: Lane Lifeboat & Davit Corp.	Marine Safety Equipment Corp.
Brooklin, N.Y; Date: 7/5/66	Point Pleasant, NJ; Date: 12/17/65
Size: 24' x 8' x 3.5'	Size: 24' x 8' x 3.5'
Cubic Cap. 403, Wt: 4,390	Cubic Cap. 370
Serial No: 14988	Serial No. 1636

TASK: Lifeboat inspection and servicing requirements.

1. Remove herculite boat covers from both 37-person motor lifeboats. Inspect interiors and exteriors for damage and coating deterioration. Clean as required. Insure drains of boats are open and free and that bilges are dry and clean.

2. Visually inspect engines for damage and deterioration. Provide commercial grade fresh water for satisfactory engine cooling and pump lubrication. Check lube oil levels in engines, add owner's supplied oil as required. Drain and change lubricating oil in each engine annually. Start and operate in ahead and astern position to insure condition without overheating. Fill fuel tanks with gas oil from ship's supply as needed. Change fuel annually, using shore supply. Add proper concentration of owner-furnished biocide to fuel as needed.

3. Insure proper concentration of cooling water anti-freeze. Fill if required from owner's supply.

4. Lower each boat, as clearance allows, to the 01 Deck level. Lower, if possible, a minimum of three times to insure freedom of lowering without

ITEM 407 LIFEBOATS continued

manual assistance. Demonstrate independent fore and aft limit switch operation.

5. After all work is completed reinstall lifeboat covers.

PURPOSE: To insure operational readiness.

FREQUENCY OF PERFORMANCE: 3-month intervals and annually.

MATERIAL REQUIREMENTS: Owner's supplied lube oil, grease, gas oil fuel, and antifreeze.

RECORD AND REPORT: Submit written report of conditions found to CMS Representative.

ITEM 410 LIFE RAFTS

DATA:

Mfg.: ELLIOT - (C. J. Hendry)	Mfg.: ELLIOT - (C. J. Hendry)
Type: 25 Man - Mark 5	Type: 25 Man - Mark 5
Serial No: CJH/25 MN/2053	Serial No: CJH/25 MN/2054
Lot: 13; 3/80	Lot: 13; 3/80

TASK: Life Raft inspection and servicing requirements.

1. Remove life rafts and hydrostatic release mechanisms from the vessel and prepare for shipment via CMS Representative supplied purchase order to cover transportation, servicing and U.S. Coast Guard Inspection.

2. Return rafts to the vessel on return from inspection. Place rafts in racks, cover securely with shipyard supplied, water-proof tarpaulin, and lash raft to rack frame with shipyard supplied 3/8" diameter rope. Return hydrostatic release to CMS Representative for securing onboard.

NOTE: Effective 1/97, the only U.S. Coast Guard Approved Japanese service vendor is: Yokohama Tsusho Co., Ltd., Yokohama, Japan
Telephone: (045) 621-8588
The CMS Representative will arrange for life raft transportation to and from Yokohama.

PURPOSE: To insure operational readiness and U.S. Coast Guard Certification.

FREQUENCY OF PERFORMANCE: Annual requirement, rafts to be serviced and returned to the vessel prior to 1 October each year.

MATERIAL REQUIREMENTS: Water-proof tarpaulin and 3/8 inch diameter rope.

RECORD AND REPORT: Provided by service vendor and U. S. Coast Guard.

ITEM 415 FIRE FIGHTING EQUIPMENT

TASK: Provide the following annual services for the fixed CO_2 System.

1. Cargo tank systems - hand operate each tank valve 5 times to insure freedom of operation. Inspect all piping and fittings to insure they are corrosion-free and protective coatings are adequate.

2. Open manual pull boxes, remove glass and operate all pulls to insure freedom of operation. Repeat each pull a minimum of 5 times. Verify cable freedom by stationing an assistant in the respective CO_2 bottle storage room. Tag each pull with date of test and re-install glass covers.

3. Grease all exposed unpainted machined surfaces. Restore all disturbed coatings per specifications with owner's supplied paint.

4. The CMS Representative will provide a US Coast Guard approved contractor to inspect all CO_2 cylinders on the ship, a total of 50 bottles. The Contractor will weigh all cylinders and submit a written report of weight, serial numbers, and date of last hydrostatic test to CMS Representative. The contractor will affix weight and date of weighing to the inspection card on each bottle.

5. Per CFR 46, 108.449, assist the CMS Representative provided contractor with the complete fixed CO_2 system pressure test with contractor's supplied nitrogen. The test includes pressures up to 70 kilograms per cm^2 (1,000 psi) and includes valves, alarms and release delays. Estimate 24 labor hours to accomplish the above.

6. The annual CO_2 tests are to be witnessed by the US Coast Guard.

7. Every 12 years (next due in 2002) 53 each, 50 pound CO_2 cylinders are to be removed from the vessel, discharged completely, and sent to a US Coast Guard approved, CMS Representative provided hydrostatic test facility. Following hydrostatic testing, the cylinders are to be filled and returned to the vessel for storage onboard in designated locations. Estimate 48 labor hours to remove, discharge and replace the cylinders on board.

TASK:. Provide the following annual services for the portable fire extinguishers

1. The CMS Representative will provide a US Coast Guard approved contractor to inspect all portable and fixed cylinders and extinguishers on the ship for serviceability and general condition. No shipyard labor or material required.

2. The CMS Representative will provide a US Coast Guard approved contractor will weigh all portable CO_2 extinguishers. No shipyard labor or material required.

ITEM 415 FIRE FIGHTING EQUIPMENT continued

3. The US Coast Guard approved contractor will tag each portable fire extinguisher with the date of inspection, and, for CO_2 extinguishers include the weight. The contractor shall provide an inventory indicating the fire extinguisher number, location, weigh, inspection result and date of last hydrostatic test.

4. Every 5 years (next due in 2001) 30 each x 15 pound and 4 each x 5 pound CO_2 cylinders are to be removed from the vessel, discharged completely, and sent to a CMS Representative provided US Coast Guard approved hydrostatic test facility. Following hydrostatic testing, the cylinders are to be filled and returned to the vessel for storage onboard in designated locations. Estimate 32 labor hours to remove, discharge and replace the cylinders on board.

NOTE: Effective 1/97, the only U.S. Coast Guard Approved Japanese service vendor is:

Yokohama Tsusho Co., Ltd., Yokohama, Japan
Telephone: (045) 621-8588

The CMS Representative will arrange for CO_2 transportation to and from Yokohama.

PURPOSE: To insure operational readiness.

FREQUENCY OF PERFORMANCE: 3-month intervals, annually and at 5 and 12 yearly intervals.

MATERIAL REQUIREMENTS: None.

RECORD AND REPORT: Reports to be provided by CMS contractors and the U.S. Coast Guard. The shipyard is to proved reports on damaged or inoperative equipment as required.

ITEM 420 FIRE STATIONS, HOSES, AND VALVES

TASK: 1. Fire Valves (3 months)
Lubricate valve stems and grease fittings. List all valves which do not operate freely or are inoperative for CMS Representative. Fully open and close all weather deck fire main valves a minimum of three (3) times.

2. Fire Stations (3 months)
Inspect all weather deck and interior fire stations to insure that hose caps and other covers are in place and hose racks are in good repair.

3. Fire Hoses (Annual)
Lay out hoses on the dock, insure that hose gaskets are in place, and connect end-to-end. Hydrostatically test all hoses with commercial grade fresh water to 125 psi for the US Coast Guard inspector. Drain and dry hoses for an minimum of 24 hours. Coil, lash and store hoses onboard in CMS Representative's designated location.

PURPOSE: To insure free operation of all valves and adequacy of equipment

FREQUENCY OF PERFORMANCE: 3-month/annual intervals.

MATERIAL REQUIREMENTS: Grease.

RECORD AND REPORT: Make written report including estimated repair costs for any mechanical or material defects to the CMS Representative.

ITEM 425 MOORING FITTINGS

TASK: High pressure lubricate with shipyard supplied heavy duty, industrial grade grease, all mooring fittings. Test all operating fittings for freedom of movement. Replace broken or missing grease fittings from ship's supply.

EQUIPMENT: All roller chocks, roller fairleads, anchor palls.

PURPOSE: To insure the mooring fittings work freely.

FREQUENCY OF PERFORMANCE: 3-month intervals.

MATERIAL REQUIREMENTS: Grease, grease fittings.

RECORD AND REPORT: Make written report of mechanical defects to the CMS Representative. Include an estimate of repair costs for each item.

ITEM 430 DECK MACHINERY

TASK: Lubricate all fittings and test operate winches in both directions a minimum of 10 revolutions. Engage/disengage anchor windlass port and starboard wildcats five (5) times. Replace grease fittings as required. Check lube and hydraulic oil levels. Add as required from ship's supply.

MACHINERY: Anchor windlass
Stern mooring winch

PURPOSE: To insure all equipment operates freely.

FREQUENCY OF PERFORMANCE: 3-month intervals.

MATERIAL REQUIREMENTS: Grease, grease fittings, lube oil.

RECORD AND REPORT: Make written report of mechanical defects to the CMS Representative. Include an estimate of repair costs.

ITEM 435 HOSE GEAR

TASK: Lubricate all fittings on winches, blocks, and goose-necks as required. Test operate winch in up/down modes for a minimum of 10 revolutions. Replace grease fittings from ship's stores as required. Check and refill lube oil as required from ship's stores.

EQUIPMENT: Topping and runner winch

PURPOSE: To insure that all equipment operates freely.

FREQUENCY OF PERFORMANCE: 3-month intervals.

MATERIAL REQUIREMENTS: Grease, grease fittings and lube oil.

RECORD AND REPORT: Make written report of any mechanical or material defects to the CMS Representative; include repair cost estimates for each defective item.

ITEM 440 CARGO VALVES

TASK: All main deck, forward and aft pumproom, forward fire and ballast pumproom valves shall be operated in full open to full closed position a minimum of three (3) times. Pressure lubricate valve stems reach rods, deck penetrations, and fittings as required. Coat valve stems and indicators with shipyard supplied heavy duty, industrial grade grease. Replace grease fittings as required from ship's stores. All valves must operate freely by hand only, without valve wrenches or other tools. List all valves which do not operate freely with repair recommendations and estimated repair costs. Remove and dry out any water inadvertently released into empty cargo tanks, pumproom bilges and void spaces.

CAUTION: Valves to designated ballast tanks, containing ballast water are not to be opened.

LOCATION: Forward pumproom motor room, forward pumproom, all cargo/oil tanks, aft pumproom.

PURPOSE: To insure that all valves operate freely.

FREQUENCY OF PERFORMANCE: 3-month intervals.

MATERIAL REQUIREMENTS: Grease, grease fittings.

RECORD AND REPORT: Make written report and repair estimate for any mechanical or material defects to the CMS Representative.

ITEM 445 WATERTIGHT AND WEATHER-TIGHT CLOSURES

TASK: Inspect all watertight and weather-tight closures for defects of covers, doors, hinges, gaskets, knife edges, and securing implements. Lubricate wing nuts, dogs, and hinges as applicable. Reseal as necessary.

PURPOSE: To insure that closures are operable.

FREQUENCY OF PERFORMANCE: 6-month intervals.

MATERIAL REQUIREMENTS: Lubricating grease.

RECORD AND REPORT: Submit written report of any defects to CMS Representative.

ITEM 450 BILGE AND DRAIN WELL INSPECTION

TASK: Inspect drain wells and bilges for condition and the absence of liquids, locations are:

a. Fresh Water Double Bottom Frame 9-24
b. Forward Pump Room Frame 20-24
c. Aft Pump Room 43-46
d. Engine Room Frame 46-76
e. Drain Wells 4-76-1 and 4-76-2

PURPOSE: To insure operational readiness.

FREQUENCY OF PERFORMANCE: Weekly.

MATERIAL REQUIREMENTS: None.

RECORD AND REPORT: Submit a written report of conditions found and date of accomplishment to CMS Representative. Submit cost estimate for cleaning and repair items.

ITEM 453 COFFERDAM INSPECTION

TASK: Inspect the following cofferdams and void interiors for moisture, deterioration, and coating condition. Close up weather deck exposed hatches only after inspection.

a. Forward pumproom, Fr. 22 P/S
b. Midships cofferdam, Fr. 30 P/S
c. Cofferdam, Fr. 43 P/S
d. Cofferdam, Fr. 44 P/S

PURPOSE: To insure operational readiness.

FREQUENCY OF PERFORMANCE: 3 months.

MATERIAL REQUIREMENTS: None.

RECORD AND REPORT: Submit written report of conditions found to CMS Representative.

ITEM 455 BALLAST TANKS

TASK: 1. Sound the following tanks which are filled with fresh water ballast treated with Drew/Ameroid CIL Rust Inhibitor.

2. Add to system owner's supplied Drew/Ameroid CIL Rust Inhibitor and biocide as indicated by owner's supplied test kit results, per manufacturer's recommendations to each ballast tank. Top off tanks to one (1) foot below bottom lip of expansion trunk with commercial grade fresh water if required.

3. Insure that each ballast tank exposed weather deck vent is open to compensate for seasonal sea water temperature changes.

	Tank	Frames	Barrels
a.	Fore Peak Tank	Bow to 9	232 Barrels

PURPOSE: To inhibit tank corrosion, to prevent algae growth, and to insure operational readiness.

FREQUENCY OF PERFORMANCE: 3-month intervals.

MATERIAL REQUIREMENTS: Owner furnished Drew Biogard WS, Drew test kit.

RECORD AND REPORT: Submit written report of soundings, condition of inhibitor and date of accomplishment to CMS Representative.

ITEM 460 TANK SOUNDINGS

TASK: Sound all double bottom tanks, diesel fuel tanks, settler tanks, cofferdams, peak, wing and deep tanks. Tank levels and the identity of the type of liquid in each tank shall be recorded and one copy posted in the Chief Engineer's office and one copy given to the CMS Representative. Levels in tanks shall be recorded in feet/inches and in gallons or barrels.

All fuel tanks are to be tested and treated to the proper concentration of biocide, from owner's supply, as recommended by Drew Chemical.

PURPOSE: To determine liquid levels and to check for possible contamination.

FREQUENCY OF PERFORMANCE: 3-month intervals.

MATERIAL REQUIREMENTS: Tee wrench, sounding tape and sounding tables, biocide test kit.

RECORD AND REPORT: Report biocide concentration, any leakage or contamination to CMS Representative. All fuel tanks are to be tested and treated to the proper concentration of biocide as recommended by Drew Chemical. Do not overdose tanks.

ITEM 462 PIPE LINE HYDROSTATIC TESTING

TASK: To pressure test the vessel's cargo, ballast, bilge and fire lines the following steps shall be taken:

1. Cargo, Ballast & Bilge Piping

a. Close all valves to each system in advance of testing. Disconnect or otherwise remove temporary fittings and appendages as required to prevent damage and insure safety. Close open pump strainers. Supply air pressure connections from shipyard supplied air to the forward pumproom, deck manifolds and aft pumproom. Open cargo tank tops, manholes, water-tight doors as required to view pipelines and valves.

b. Supply 150 psi air pressure to each system per the CMS Representative. Bring air pressure slowly up to maximum pressure checking pipe lines and valves frequently during the process.

c. At approximately 50 psi open the individual system end suction or termination valve/s, one at a time allowing the pressure to re-build, to blow each system and off-sticker clean.

d. At full pressure of 150 psi, inspect all systems, log pipeline leaks, leaking valves and related problems for repair.

e. Release pressure, return valves and fittings to normal Phase IV and dehumidification settings. Open pump suction strainers as appropriate. Clean tank bottoms, bilges and void as required following the tests.

f. Report deficiencies to the CMS Representative. Address a letter of test confirmation to the local ABS Surveyor's office with a copy to the CMS Representative.

2. Fire Main

a. Close all valves in the system in advance of testing. Disconnect or otherwise remove temporary fittings and appendages as required to prevent damage and insure safety. Close open fire pump strainers. Supply air pressure connections from shipyard supplied air to the fire line. Open water-tight and doors as required to view pipelines and valves.

b. Supply 150 psi air pressure per the CMS Representative. Bring air pressure slowly up to maximum pressure checking pipe lines and valves frequently during the process.

c. At approximately 50 psi open the individual exposed weather deck valves, one at a time allowing the pressure to re-build, to blow each system and off-sticker clean.

d. At full pressure of 150 psi, inspect all systems, log pipeline leaks, leaking valves and related problems for repair.

ITEM 462 PIPE LINE HYDROSTATIC TESTING continued

e. Release pressure, return valves and fittings to normal Phase IV and dehumidification settings. Open pump suction strainers as appropriate. Clean tank bottoms, bilges and weather deck areas as required following the tests.

f. Report deficiencies to the CMS Representative. Address a letter of test confirmation to the local US Coast Guard inspector's office with a copy to the CMS Representative.

PURPOSE: To determine system status and insure readiness for service.

FREQUENCY OF PERFORMANCE: Annual.

MATERIAL REQUIREMENTS: Shipyard supplied air pressure, fittings and gauges.

RECORD AND REPORT: Written report listing deficiencies to CMS Representative. Letter of test confirmation to ABS and US Coast Guard local offices as applies to systems tested.

ITEM 465 OPEN ITEM

ITEM 475 TROPICAL STORM CONTINGENCY PLAN

TASK: To provide for vessel and related equipment security during the approach and passage of tropical and extra tropical storms, while moored at the contractor's facility.

The following applies to periods during which the vessel is in Maintenance, Activation or Deactivation status when there is no crew onboard. The MILITARY SEALIFT COMMAND FAR EAST INSTRUCTION 3140.1C defines the approach of storms as follows:

Tropical Cyclone Condition IV - The storm trend indicates a possible threat of destructive winds within 72 hours.

Tropical Cyclone Condition III - Destructive winds are possible within 48 hours.

Tropical Cyclone Condition II - Destructive winds are anticipated within 24 hours.

Tropical Cyclone Condition I - Destructive winds are anticipated within 12 hours.

The contractor shall assume the following tasks as the storm approaches and passes:

CONDITION IV

Evaluate current maintenance and repair projects, status of vessels' moorings, fenders, seaworthiness and water-tight integrity. Alert shipyard staff of activities required in the event continued exposure to storm.

CONDITION III

Commence closing down large projects effecting the vessel's security and integrity. If required, move vessel to assigned berth, re-moor with doubled lines and chains.

CONDITION II

Commence securing all projects and related activities. Commence removing, or securing, loose gear, equipment and material from exposed weather decks.

Review mooring lines and chains for chaffing and adjustment requirements. Confirm that fenders are inflated, securely moored and positioned.

Advise the CMS Representative of vessel status and details of approaching storm.

ITEM 475 TROPICAL STORM CONTINGENCY PLAN continued

CONDITION I

Provide supervisor and four laborers for 24-hour shift, to remain onboard the vessel through the storm passage to all clear. The personnel to be provided with food, water, foul-weather clothing, bedding, and VHF radio equipment with frequencies compatible with local harbor operations and tug companies.

The above personnel shall keep a continuous watch over the vessels mooring, fenders and alarm systems taking appropriate action as required to insure the vessel's security.

In the event of emergency, ship's equipment may be utilized as required. Personnel may use available ship's living and recreation spaces during the storm passage. All spaces utilized shall be cleaned following the storm passage.

The Crowley Marine Services Representative shall be kept closely advised, as circumstances permit, of the vessel status during and immediately following storm passage.

PURPOSE: To maintain vessel's security and integrity during storm passage.

FREQUENCY OF PERFORMANCE: During destructive storm passage.

MATERIAL REQUIREMENTS: Personnel and above noted equipment only. Tugs, if used, should be billed at appropriate hourly rates only.

RECORD AND REPORT: Communicate vessel's condition, preparations prior to, during and following storm passage per the above. Report all damages sustained, estimated repair costs and schedules to the Crowley Marine Services Representative.

ITEM 480 MOBILIZATION TOWAGE

TASK: To prepare the vessel for sea transit and towage from its lay berth at Chitose-Ko, Hiroshima Prefecture to the contractor's lay berth for dry docking, repairs and/or long term berthing. The following items will apply:

1. Towage Preparation
   a. Close 23 each manholes and six each water-tight doors & hatches
   b. Allow ¥1.200,000 for securing/lashing miscellaneous tools & ship's gear, mooring lines, fresh water ballasting, etc.
   c. Allow ¥950,000 for securing D/H, cathodic systems, related valves and pipe system, deck cargo and pumproom valves.
   d. Allow ¥420,000 for securing steering gear, shaft locks, miscellaneous engineroom and control room equipment.

2. Towage Survey
   Provide a Salvage Association Surveyor for approval of the vessel's towage preparation, towing arrangement, the towing tug, the proposed towing route and restrictions if any.

3. Towage
   a. Provide a minimum of 4,000 BHP, twin-screw, ocean classed tug, fully found with crew and fuel. An American Flag tug is preferred.
   b. Rig one each, 300 foot x 5" diameter synthetic emergency tow line, with 150 foot x 2 inch float-line and buoy from ship's stores. The emergency tow line to be connected to a short shot of 1-1/2 inch chain from ship's supply, led through a bow chock and festooned, with break-away line secured to hand rail bases, along the port or starboard side to the stern. The pick-up line and buoy shall be rigged from the end of the emergency tow hawser to trail astern of the vessel while under tow.
   c. Provide a surveyor approved towing bridle, rig and secure to the vessel's bow to the surveyor's approval.
   d. Provide and rig the international and Japan Marine Safety prescribed lights and towing signals
   e. Provide required port and Inland Sea clearances with local customs, Marine Safety and other Japanese agencies as required.
   f. Provide assist tugs, dockmaster and line handlers to unmoor the vessel and shift to stream.
   h. Provide Inland Sea Pilotage, assist and escort tugs and craft as required.
   i. Provide local inland waters pilotage, assist and escort tugs and craft as required.
   j. Provide line handlers, dockmaster, docking and mooring tugs at contractors shipyard for mooring the vessel at its assigned lay berth.
   k. Disconnect towing gear and equipment as listed above, store ship's provided equipment per the CMS Representative.

ITEM 482 DEMOBILIZATION TOWAGE

TASK: This item only applies if the vessel is assigned for repair and or dry-docking only and not to be long term moored at the contractor's facility. The item is to prepare the vessel for return sea transit and towage from its lay berth at the contractor's lay berth to Chitose-Ko, Hiroshima Prefecture if required to demobilize the vessel. The following will apply:

1. Towage Preparation
   a. Per the shipyard's repair and dry-dock works secure the vessel for sea towage.

2. Towage Survey
   Provide a Salvage Association Surveyor for approval of the vessel's towage preparation, towing arrangement, the towing tug, the proposed towing route and restrictions if any.

3. Towage
   a. Provide a minimum of 4,000 BHP, twin-screw, ocean classed tug, fully found with crew and fuel. An American Flag tug is preferred.
   b. Rig one each, 300 foot x 5"diameter synthetic emergency tow line, with 150 foot x 2 inch float-line and buoy from ship's stores. The emergency tow line to be connected to a short shot of 1-1/2 inch chain from ship's supply, led through a bow chock and festooned, with break-away line secured to hand rail bases, along the port or starboard side to the stern. The pick-up line and buoy shall be rigged from the end of the emergency tow hawser to trail astern of the vessel while under tow.
   c. Provide a surveyor approved towing bridle, rig and secure to the vessel's bow to the surveyor's approval.
   d. Provide and rig the international and Japan Marine Safety prescribed lights and towing signals
   e. Provide required port and Inland Sea clearances with local customs, Marine Safety and other Japanese agencies as required.
   f. Provide assist tugs, dockmaster and line handlers to unmoor the vessel and shift to stream.
   h. Provide local inland waters pilotage, assist and escort tugs and craft as required.
   i. Provide Inland Sea pilotage, assist and escort tugs and craft as required.
   j. Allow ¥1,350,000 for line handlers, dockmaster, docking and mooring tugs at the Chitose-Ko, Hiroshima Prefecture shipyard for mooring the vessel at its assigned lay berth.
   k. Allow ¥2,275,000 for disconnect towing gear and equipment as listed above, and store ship's provided equipment per the CMS Representative; re-establishing D/H and cathodic systems and preparing the vessel for long term moorage.